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Procedia - Social and Behavioral Sciences 174 (2015) 227 – 232

Procedia
Social and Behavioral Sciences

INTE 2014

Effects of the media to promote the scratch programming capabilities creativity of elementary school students

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Abstract

Developing creative Promote higher-order thinking processes Give learners specific ability to think on their wide variety and innovative of the original. It led to the discovery and creation of new inventions or form new ideas. Consistent with the educational goals of the program.This research aim to study a guild line of using Scratch Computer Program that leading to creativity. And study the effects of media on the Scratch programming capabilities creativity.

The sample consisted of 60 students who were studying in semester 1. 2013 academic year, using purposive sampling (Purposive Sampling) tool used in this research is a lesson plan. Scratch and computer media test innovative ideas. Statistics used Data analysis were percentage, mean, standard deviation and Dependent t-test.

The findings indicated that

First, Mediums Scratch program can be used as a medium for learning activities. The adoption includes a multimedia interactive media as a tool to support learning.

Second, Scratch media performance of computer programs is equal according to the criteria set 82.46/82.25 E1/E2 is 80/80.

Creativity of students. Received instruction from the learning activities through the medium of a computer program Scratch by elements of creativity is an idea ingenious ideas flexibility. Initiatives and ideas census. Higher posttest than pretest statistically significant at the .05 level of performance, computer media Scratch equals 82.46/82.25 according to defined criteria E1/E2 is 80 /80.

In conclusion the computer program Scratch media can lead creative development of students through the learning activities that promote innovative education that cause the learners' desirable.

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Peer-review under responsibility of the Sakarya University

Keywords: Scratch programming, Higher-order Thinking, Creative Thinking, Computer Multimedia;

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Peer-review under responsibility of the Sakarya University
doi:10.1016/j.sbspro.2015.01.651

1. Introduction

In teaching and learning computer the teacher need to be innovative in the development of the teaching process. In order to make the students to understand content that is changing fast. Which can be respond to the nature of the learners. Educational innovation, Published Scratch which is software that produced by Massachusetts Institute of Technology, where the students can write object-oriented programs through media applications. (Brennan, 2012: IPST, 2013) That can be used in teaching and learning to be effective. Innovative education that is consistent with the National Education Act BE 2542

The student centered, all students have the ability to learn and develop themselves. Which help them to encourage students to develop their full potential naturally. The learning process must be consistent with the interests and aptitudes of individual differences. By providing skills training, cognitive management situations and apply the knowledge to prevent and solve problems. (Office for National Education Standards and Quality Assessment, 2006).

Therefore, there should be the development of innovative educational computer programs Scratch Cards to be able to transfer the knowledge, skills, attitudes and cognitive development. In particular, advanced thinking. To enable the students to think of a solution. To be adjusted as the circumstances consistent with the Basic Education Core Curriculum BE .2551 Determining the Students desirable to five factors: the ability to communicate. The ability to think, to solve and with the ability to use technology skill in their life. (Ministry of Education, 2008)

To guide the development of learning activities aimed at learning more about the performance. The creative thinking is high (Higher order thinking), should be encouraged. Encourage the creative development of children from the first step. Due to the nature of this age need to learn by curiosity already high. If a child has been promoting since it will help to develop critical thinking to a higher (Kowasin, 1997).

So the development of creative talent should begin to develop from students in elementary school. Which is the development of creativity rather constant (Panmanee, 2002) and the importance of such issues. Researchers are interested in the development of computer programs to develop capabilities Scratch creativity. For elementary school students Emphasis on learning through modern media of stimuli to stimulate interest.

Thus contributing to the development of creative research to make the media Scratch program for elementary school students effective appropriate to the learning and teaching of computer media. It will bring out the creative process of developing the ability to deploy properly. To guide the development of instructional computers to provide students with features consistent with educational goals. Contribute to improving the quality of education that focuses on students is significant. National Education Act BE 2542 and the findings can be used to develop instructional materials Computer for elementary school students to develop academic anyway.

2. Purpose of the Study

1. To study guideline for applying the Scratch Program in managing learning activities.
2. To develop a computer program to promote Scratch capabilities creativity of elementary school students.
3. To study the effects of media on the Scratch programming capabilities creativity.

3. Research Questions

How the use of computer program, Scratch media can affect the creativity of elementary school students?

4. Method

The researcher used a form of experimental research. (Experimental design) as well as the experimental group (One Group Pre test-Post test Design) are conducting research on the following topics.

4.1 Population and sample

1. Population used in the study are elementary school Students at all levels at Demonstration School Nakhon Ratchasima Rajabhat University. There were 262 people during first semester academic Year 2013.

2. Sampling of 60 elementary school students used methods of purposive sampling.

4.2 Research Tools

1. Lesson plans using the Scratch programming media for use as a guide. In the event the course of four planned duration of 16 hours.

2. Scratch computer media for learning activities about the creation of digital media. Used as the medium of instruction by learning plans number of 4 pieces.

3. The researcher adapt from Torrance Measurement of Creativity updates by Aree Panmanee (Teacher Training Department, 1979).

4.3 Data collection and analysis.

The research was conducted manually by following procedure.

1. A rating of 3 members meeting to clarify issues in the ratings in order to adhere to the same standards

2. Orientation for students in Grade 4 to clarify issues in the use of computer media Scratch program to develop creative skills.

3. After orientation the students test their creativity by A Picture (Torrance Test of Creative Thinking Figural Form A) 3 activities at 10 minutes following activities.

3.1 The drawing 1 item.

3.2 by the addition of images to complete 10 questions.

3.3 Use of parallel lines of 30 items.

4. Recheck a test of creativity through picture form (Torrance Test of Creative Thinking Figural Form A) as part of a creative test scoring by 3 directors. The scores were combined and averaging

5. Teaching conducted by using a computer program Scratch media to develop creative skills of the elementary school students By the Activities Plan Number 4 units with a total time of 16 hours, which the researcher who taught themselves.

6. Post-test by students to test academic achievement and test their creativity through photo tags (Torrance Test of Creative Thinking Figural Form A) the same as the pre-test study with the experimental group. Class time confirm rate by the original series.

7. Collecting data to be analyzed by statistical methods as follows.

7.1 Analysis Plan. An analysis of the proper consistency of lesson plans and summary of feedback from the experts.

7.2 Scratch program performance analysis of computer media to develop creative skills. The elementary school students. The benchmark E1/E2 is 80/80.

7.3 Comparison of the creative abilities of elementary school students. Before and after the study materials, computer programs using scratch tested by t-test for dependent.

5. Findings

Research The Scratch Computer Aided media to promote the creative abilities of elementary school students revealed the following results:

1. Published Scratch program can be used as a medium for learning activities. The adoption include a multimedia interactive media and as a tool to support learning. According to the development of the computer of the experts.

Figure 1. The media Scratch Computer that developed by the researcher.

2. Scratch media performance of computer programs is equal according to the criteria set 82.46/82.25 E1/E2 is 80/80. As shown in Table 1.

Table 1: Effectiveness of computer media Scratch program to develop creative skills of the elementary school students.

items	number of students	Means ($\overline{X}$)	Percentage	the performance criteria
Scoring tests during the study Efficiency of the process (E_1)	30	65.97	82.46	80/80
Post test Scoring tests of the performance of the results (E_2)	30	32.90	82.25	
The performance of the Scratch media computer programs is82 .4682.25/				

From Table 1, Published performance test results of the Scratch program to develop creative skills of elementary school students found that the efficiency of the learning process with computer media Scratch derived from test scores between students' average score is 82.46 percent .And the performance of computer media Scratch program to change the behavior of the learner derived from the average of the test after school with an average of 82.25 percent. So the Scratch computer media develop creative skills of the elementary school students, thus effectively equal to 82.46/82.25 according to defined criteria is 80/80.

3. The Creativity of primary school students received instruction from the event. Learning through computer programming Scratch by elements of creativity, fluent thinking, flexible thinking, initiatives and ideas census. The higher posttest than pretest statistically significant at the .05 level. As shown in Table 2 and Table 3.

Table 2 Ratings the creative side previous and after learning of elementary school students. Learning through computer-mediated Scratch program to develop creative skills.

The creative abilities	Pre test (N =30)		post test (N =30)	
	$\overline{X}$	$S.D.$	$\overline{X}$	$S.D.$
The initiative	13.11	0.45	32.31	0.91

The creative abilities	Pre test (N =30)		post test (N =30)	
	$\overline{X}$	$S.D.$	$\overline{X}$	$S.D.$
The thinking fluency	12.58	1.06	31.93	1.51
A flexibility and meticulous thinking.	5.04	0.86	10.81	0.79
Total	30.73	2.37	75.06	3.20

From Table 2, we found that elementary school students which learning through computer-mediated Scratch program to develop creative skills. The development of creative capabilities pre test 30.73 and post test 75.06, which is higher.

Table 3 the comparison of the ratings the creative side before and after the class. Elementary school students to learn computer programming with Scratch the media to develop creative skills.

Testing	N	$\overline{X}$	$S.D.$	t
pretest	30	30.73	2.37	116.964**
posttest	30	75.06	3.20	

** Significant at .05 level.

From Table 3, showed that the creative abilities of students are average ($\overline{X}$) Equals 30.73 and the standard deviation ($S.D.$) of 2.37, Rating creative side after learning the average ($\overline{X}$) was 75.06 and the standard deviation ($S.D.$) of 3.20, the statistical value is equal to -116.964, which showed that after learning with computer media. Scratch programming for elementary school students Develop the creative side higher than before learning with computer-mediated Scratch program to develop creative skills. Statistically significant at the .05 level, indicating that an effective media program Scratch. Gives students the ability to develop creativity soared.

6. Discussion

1. The results showed that: Scratch computer media guidelines to apply a multimedia interactive media and as a support tool for learning consistent with Hongto (2005) proposed that the computer lesson help the better the performance. Content analysis is through education as a selection of teachers and scholars used appropriately.

However, bringing about computer use in teaching which consistent with the findings of Quing (2006) studied the effects of using a computer for the adult learner. Study found that the mathematics of the lesson have a positive impact on for mathematics. But it should take into the account of the experience of the learner as well.

2. The results showed that: Scratch media performance of computer programs is equal according to the criteria set 82.46/82.25 E1/E2 was 80/80 show that the computer- generated research. According to set criteria the computer- generated the process of building a system through the assessment and monitoring of both experts in the field of teaching career and technology strand. In terms of the lessons include images, audio, questions and an exercise which is consistent with the concept of Cheenatakul (2003) noted that the computer can create animated pictures and sound which Motivating learners. And in each step of the tutorial also focus the learning process on their own. The nature of learning emphasizing learner is important.

However, should encourage the students to use the computer by self-study, both before and after learning. Consistent with the findings of Hargrave and Kenton (2002) has researched the subject, presentations, multimedia programs, teaching research found that use multimedia programs that have been designed well before teaching. Gives students gain a learning experience that is different from the original.

3. The results showed that: Creativity of students which received instruction from the learning activities through the medium of a computer program Scratch by elements of creativity is an idea ingenious ideas flexibility. The initiatives and ideas census are higher post test than pre test statistically significant at the .05 level due to computer media Scratch and plan activities that promote creative learning. Consistent with the findings of Seelpipat (1997) studied the scientific creativity of the students at one of a series of events create scientific inventions and

ideas fluently scientific ideas and flexible scientific student. By using a series of activities to create scientific inventions with the teacher as the instructor to create scientific inventions difference is statistically significant at the 0.01 level part of the global initiative scientific differences are statistically significant at the 0.05 level.

However, it should focus on activities designed to promote the use of thinking skills in line with guidelines to promote creativity through the learning process of Torrance (Pornrungrot, 2003) has focused on encouraging children to discover their own answers . A question of provocation and urged the answer is to help develop your child's creativity with. Use questions to stimulate intellectual development. The idea is to expand the types of questions encourage respondents have used several ideas approach. Does not cause anxiety, but it must be the response of the opinions of the respondents. There needs to express ideas and solve problems.

7. Recommendations

1. Useful suggestions

1.1 According to an expert interviews gathering for the effective online learning development, so instructors should adapt feedback to develop innovative media package. By taking into account the content of the lesson appropriate to comply with the level of the course. As well as to be the guidelines for evaluation and achievement, online learning lessons, a visual presentation, the graphics and the sound of the CAI should be appropriate to the content and the class of learners , respectively.

1.2 The development of online effective computer follows the 80/80, so the instructors should use the guide of the development of a computer. This makes students achievement higher. The development of creative and satisfaction are significant to manage to improve the teaching and learning purposes.

1.3 The result of using computer help the students developed creativity. So should continue to reinforce learning, creativity constantly. By additional training outside of school hours in order to develop the creativity of students to develop a rich and meaningful learning.

2. Suggestions for further research.

2.1 Should develop in various other content and grade level of a computer and technology to develop their creativity.

2.2 Should have been doing research on the computer in other ways, such as testing simulations, review, or a game of instruction, etc., to a variety of media for teaching and developing skills in thinking.

Acknowledgments

The researcher would like to express his sincere thanks to Nakhon Ratchasima Ratjabhat University for financial support to this research and research presentation.

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